



Federal Aviation Administration

Enterprise BPMS Requirements

Version 1.7

Enterprise BPMS Initiative	Version: 1.7
Requirements	Date: 5/6/2010

#	Category	Requirement
1.	Industry	The solution must be a web-enabled solution
2.	Industry	The solution must be a product that is recognized by a major industry research report such as Gartner
3.	Industry	The solution must be able to support industry standards such as BPMN, BPEL , XPD L and Wf-XML
4.	Industry	The solution must be able to support integration in a Java/J2EE based environment
5.	Industry	The solution must be able to support integration in a .NET based environment
6.	Industry	The solution vendor must be able to demonstrate that the primary market/function of the product is BPM
7.	Industry	The solution must be platform independent
8.	Industry	The solution must support immediate and scheduled deployment
9.	Industry	The solution must be in use in a highly regulated industry/organization
10.	Industry	The solution vendor must be able to demonstrate prior experience establishing a Center of Excellence (COE)
11.	Industry	The solution must be able to integrate into an organization's governance model and processes
12.	Implementations	The solution must be able to support straight-through processing with no human intervention
13.	Implementations	The solution must be able to support user notification via internal task tracking (separate from e-mail notifications)
14.	Implementations	The solution must be able to support value chain participation with multiple user and security groups
15.	Design/Usability	The solution must be able to provide a visual representation for viewing, creating and editing processes
16.	Design/Usability	The solution must be able to provide capability to create/modify/delete custom help/tutorial
17.	Design/Usability	The solution must be able to support Iterative development
18.	Design/Usability	The solution must be able to support collaborative process mapping for use by non-technical users for the purpose of documentation, analysis and prioritization
19.	Design/Usability	The solution must be able to support collaborative process implementation features for use by technical Business Analysts and IT professionals resulting in a functioning application
20.	Design/Usability	The solution must be able to provide a form design module to speed creation of user interfaces with sophisticated validation
21.	Design/Usability	The solution must be able to support references to user's organizational relationships as maintained in external directories for purposes of roles and

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		routing
22.	Design/Usability	The solution must be able to provide a modeling environment which is simple enough for user to define processes and define forms without technical assistance
23.	Design/Usability	The solution must be able to provide industry standard user interface elements, (e.g. drop downs, tabbing, text fields, etc.)
24.	Design/Usability	The solution must be able to provide a tree type displays where information can be expanded as needed using typical '+' and '-' tab type operations
25.	Design/Usability	The solution must be able to validate process models during development (e.g. not leave dangling arrows on diagrams when items are deleted)
26.	Automation/Task Management	The solution must be able to load balance and auto route work items across both roles and specific users
27.	Automation/Task Management	The solution must allow users to create and upload documents as part of a workflow
28.	Automation/Task Management	The solution must display the history of work items (up to 20 work items) for the user without running the specific process
29.	Automation/Task Management	The solution must be able to allow the user to distribute or route work items and documents to other members or roles
30.	Automation/Task Management	The solution must be able to automatically save data periodically based on a configured time
31.	Automation/Task Management	The solution must allow users to check-in and check-out documents
32.	Automation/Task Management	The solution must allow for differentiating between active and archived stores of documents, with archival to occur based on business rules
33.	Integration	The solution must be able to integrate with external authentication and authorization services such as an identity management (i.e. LDAP, Active Directory)
34.	Integration	A solution must allow developers to build integration to an existing web service and the results within a process
35.	Integration	A solution must allow developers to expose a process or process logic as a web service
36.	Integration	The solution must support the building of interfaces to external communication mechanisms and legacy systems.
37.	Integration	The solution must support XML encapsulation for HTTP and HTTPS type requests
38.	Integration	The solution must support XML encapsulation for SOAP type requests
39.	Integration	The solution must support WSDL and other services
40.	Integration	The solution must support RESTful web services
41.	Integration	The solution must allow for integration with XML interfaces that are based on standards. (i.e. AIXM, NIEM, XBRL and others.)
42.	Integration	The solutions must provide an API for accessing and changing the work list portal/portals

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43.	Integration	The solution must integrate with out-of-the-box work list portals for process and workforce management
44.	Integration	The solution must support the use of standards based relational database management systems (RDBMS) interfaces such as ODBC and database query languages such as SQL
45.	Transaction Control	The solution must be able to perform transaction commitment or backing-out of a transaction based on business rules and must have the notion of a prior system state
46.	Transaction Control	The solution must support document audit trails
47.	Transaction Control	The solution must support audit trails for changes made to a workflow design
48.	Transaction Control	The solution must allow a system administrator role to take control of documents or processes
49.	Transaction Control	The solution must allow users to transfer or delegate control of a document or process to another user
50.	Event Management	The solution must automatically detect events from other systems, evaluate rules and take appropriate action
51.	Event Management	The solution must support asynchronous system calls
52.	Discovery/Analysis	The solution must be able to import and export BPMN process models to Visio
53.	Discovery/Analysis	The solution must be able to import and export reports, data and process diagrams to common office formats.
54.	Discovery/Analysis	The solution must be able to import and export reports, data and process diagrams to other proprietary formats such as PDF
55.	Discovery/Analysis	The solution must support non-technical, visual approaches to process modeling
56.	Discovery/Analysis	The solution must allow for the definition of new processes in the organization
57.	Discovery/Analysis	The solution must allow for analysis of existing processes in the organization
58.	Discovery/Analysis	The solution must have the ability to identify current organizational process bottlenecks
59.	Discovery/Analysis	The solution must have the ability to identify opportunities for cost savings in current processes
60.	Discovery/Analysis	The solution must allow for analysis to be collaborated by teams that are geographically dispersed
61.	Discovery/Analysis	The solution must allow documents in formats such as PDF, MS Word, and Excel to be stored and retrieved from an external content management system such as EMC Documentum
62.	Modeling/Design	The solution must allow for multiple development groups to share process data
63.	Modeling/Design	The solution must have the ability to generate executable workflows without coding or development

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64.	Modeling/Design	The solution must have the ability to define and manage user work lists at user or group level
65.	Modeling/Design	The solution must provide robust API
66.	Modeling/Design	The solution must allow users to design in cross-milestone checks for disparate process groups
67.	Modeling/Design	The solution must be able to support a Transformational (input-output) approach
68.	Modeling/Design	The solution must support Block structured programming language approach
69.	Modeling/Design	The solution must support a story telling / use case driven approach
70.	Modeling/Design	The solution must support a hierarchical process tree approach
71.	Modeling/Design	The solution must support a flow intensive approach
72.	Modeling/Design	The solution must support a timeline based process modeling approach
73.	Modeling/Design	The solution must support a state driven/case file driven modeling approach
74.	Modeling/Design	The solution must support a role oriented / swim-lane modeling approach
75.	Modeling/Design	The solution must support a communication and collaboration modeling approach
76.	Modeling/Design	The solution must support a systemic dynamic process modeling approach
77.	Modeling/Design	The solution must support a goal oriented, declarative and constraint-based process modeling approach
78.	Modeling/Design	The solution must support a highly graphical 3-D process visualization modeling approach
79.	BPR/Simulation	The solution must provide simulation capabilities that do not require process to be deployed into a runtime environment
80.	BPR/Simulation	The solution's simulation environment must be able to bring process analysis data back into the simulation environment
81.	BPR/Simulation	The solution's simulation environment must be able to generate data that can be used in the analytics environment like that from live processes
82.	BPR/Simulation	The solution's simulation environment must be able to use and apply closed-loop process optimization simulations
83.	BPR/Simulation	The solution must allow for the process simulations to be run regularly using real world data
84.	BPR/Simulation	The solution must be able to regularly deploy and use what-if scenarios due to process nature
85.	Integration/Execution	The solution must be used for initial analysis to create a process repository
86.	Integration/Execution	The solution must be able to fully integrate with existing FAA systems

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87.	Integration/Execution	The solution must provide the ability to deploy multiple versions of the same workflow
88.	Integration/Execution	The solution must provide the ability to retrieve previous versions of artifacts and entities
89.	Integration/Execution	The solution must provide the ability to reactivate earlier versions of a process or activity
90.	Integration/Execution	The solution must have the ability to export data to one or multiple FAA data warehouse repositories
91.	Integration/Execution	The solution must support the use of SOAP/HTTP, JMS and Secure FTP for integration with other FAA systems within the enterprise
92.	Integration/Execution	The solution must support rich integration with document management systems such as EMC Documentum to allow operations such as text based search, Boolean search, document linking and other features of the Documentum API
93.	Integration/Execution	The solution must have the capability to integrate with help desk ticketing systems
94.	Integration/Execution	The solution must have the capability to integrate with collaboration system such MS Sharepoint
95.	Integration/Execution	The solution must have the capability to integrate with enterprise architecture repositories such as IBM System Architect
96.	Integration/Execution	The solutions must support integration to one or more industry standard Enterprise Service Bus (ESB) implementations such as Progress Software FUSE
97.	Integration/Execution	The solution must support the integration of geospatial display components, including geographic mapping tools such as Google Earth and ESRI
98.	Integration/Execution	The solution must be able to use Oracle-based user roles
99.	Monitoring/Optimization	The solution must be able to send regular & escalating email alerts for scheduled or stuck processes
100.	Monitoring/Optimization	The solution must allow users to communicate in real-time with the process engine
101.	Monitoring/Optimization	The solution must be able to feed real-time data back to simulation for optimization teams
102.	Monitoring/Optimization	The solution must allow an extensive aggregation of data and events for monitoring
103.	Monitoring/Optimization	The solutions must allow users to easily change monitoring thresholds
104.	Monitoring/Optimization	The solutions must allow access to execution and performance data for regular data mining
105.	Reporting	The solution must have per activity and end-to-end performance tracking
106.	Reporting	The solution must be able to capture any piece of business process data to power reports and dashboards without custom database work/coding
107.	Reporting	The solution must provide a non-technical business analyst the ability to generate ad-hoc reports and charts using system data, without writing code

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108	Reporting	The solution must allow the user to create a dashboard which includes multiple reports based on local process data as well as external data
109	Reporting	The solution must allow developers to access the custom business data and process data from a third-party reporting tools such as SAP Crystal Reports
110	Reporting	The solution must allow drill-down capability on records to view further details per record or groups of records
111	Reporting	The solution must have the capability for real-time analytics as opposed to end of period reporting only
112	Reporting	The solution must have the ability to publish content to World Wide Web as well as to FAA intranet
113	Reporting	The solution must have the ability to export data, reports and process diagrams to Adobe PDF format
114	Reporting	The solution must have the ability to export and import data and reports to MS Excel format
115	Reporting	The solution must have the ability to export data and reports to MS Word format.
116	Reporting	The solution must have the ability to export data and reports and process diagrams to MS PowerPoint
117	Reporting	The solution must have the ability to auto-encrypt reports before publishing
118	Reporting	The solution must have the ability to auto-send reports via e-mail to the user community
119	Reporting	The solution must have the ability to support or export to Multi dimension OLAP (MOLAP)
120	Reporting	The solution must have the ability extract process data to support FOIA reporting
121	Reporting	The solution must have the ability to create customized dashboards within the tool itself
122	Reporting	The solution must support basic charting capability, including graphics, pie charts, and bar charts
123	Reporting	The solution must support WYSIWYG printing capability for all screen implementations
124	Rules/Customization	The solution must allow segregation of internal ATO versus customer facing activities
125	Rules/Customization	The solution must allow management of activity by document authors separately from workflow participants
126	Rules/Customization	The solution must allow rules to be defined to be integrated with document management systems such as EMC Documentum
127	Rules/Customization	The solution must allow rules to be defined and integrated with accounting and financial systems
128	Rules/Customization	The solution must allow rules to be defined to be integrated with user security and role data
129	Rules/Customization	The solution must be able to route work items based on complex rules

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130	Rules/Customization	The solution must have the ability to establish checkpoints in parallel workflow components
131	Rules/Customization	The solution must support the automation of an organization's RACI matrix
132	Rules/Customization	The solution must allow work prioritization rules
133	Patterns	The solution must have strong emphasis on workflows with multiple and highly customized pathways
134	Patterns	The solution must support a Sequential workflow pattern
135	Patterns	The solution must support a Parallel Split workflow pattern
136	Patterns	The solution must support a Synchronization workflow pattern
137	Patterns	The solution must support an Exclusive Choice workflow pattern
138	Patterns	The solution must support a Simple Merge workflow pattern
139	Patterns	The solution must support a Multiple Choice workflow pattern
140	Patterns	The solution must support a Multiple Merge workflow pattern
141	Patterns	The solution must support a Discriminator workflow pattern
142	Patterns	The solution must support an N out of M join workflow pattern
143	Patterns	The solution must support a Synchronizing Merge workflow pattern
144	Patterns	The solution must support an Arbitrary Cycles workflow pattern
145	Patterns	The solution must support an Implicit termination workflow pattern
146	Patterns	The solution must support a Multiple Instances with a prior Design Time Knowledge workflow pattern
147	Patterns	The solution must support a Multiple Instances with a prior Runtime Knowledge workflow pattern
148	Patterns	The solution must support a Multiple Instances with no prior Knowledge workflow pattern
149	Patterns	The solution must support a Multiple Instances requiring Synchronization workflow pattern
150	Patterns	The solution must support Deferred Choice workflow pattern
151	Patterns	The solution must support an Interleaved routing workflow pattern
152	Patterns	The solution must support a Milestone workflow pattern

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153	Patterns	The solution must support a Cancel Activity workflow pattern
154	Patterns	The solution must support a Cancel Case workflow pattern
155	Patterns	The solution must support rules that use real time data from one or more other FAA systems.
156	Patterns	The solution must allow for rules to be used to implement FAA process related legal policies.
157	Patterns	The solution must support Rules that perform standard MS Excel type calculations.
158	Patterns	The solution must support Ad hoc routing of work items
159	Patterns	The solution must support time based and event escalation capabilities
160	Patterns	The solution must support workload balancing based on real time process metrics
161	Patterns	The solution must allow an authorized user to complete work items offline
162	Security	The solution must ensure that only authorized users can perform appropriate functions.-
163	Security	The solution must support integration to an external single-sign-on environment.
164	Security	The solution must be able to associate a user to multiple roles and multiple groups.
165	Security	The solution must allow for the addition/modification/deletion of user defined roles.
166	Security	The solution must provide role based access control capabilities.
167	Security	The solution must support real-time integration with external organizational repositories for its role, user and group information.
168	Security	The solution must support integration with LDAP such as MS Active Directory
169	Security	The solution must support integration with IBM Lotus notes.
170	Security	The solution must be able to integrate with one or more digital signature offerings or provides its own
171	Security	The solution must lock the user after the maximum number of unsuccessful login attempts
172	Security	The solution must terminate the user session if the user is inactive after set period of time
173	Security	The solution must generate audit records for specified events
174	Security	The solution must allow limited amount of concurrent user sessions
175	Security	The solution must provide time stamps in its audit records

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176	Security	The solution must protect audit records and tools from unauthorized access
177	Security	The solution must provide the capability to automatically process records for events of interest based on selectable, event criteria
178	Security	The solution must produce audit records that contain sufficient information to establish what events occurred, the sources of the events, and the outcomes of the events
179	Security	The solution must provide the capability to include additional, more detailed information in the audit records for audit events identified by type, location, or subject
180	Security	The solution must automatically disable inactive accounts after organization-defined time period
181	Security	The solution must identify and handle error conditions in an expeditious manner without providing information that could be exploited by adversaries
182	Performance	The solution must support load balancing
183	Performance	The solution must have fault tolerance as a part of its architectural system design
184	Performance	The solution must support clustered deployments
185	Performance	The solution must provide the ability to ensure high availability
186	Performance	The solution must be highly scalable, able to support up to 10,000 concurrent users & up to 1 million transactions per day
187	Reliability	The solution must support clustered deployments
188	Reliability	[This requirement has been removed]
189	Regulatory	The solution should be able to store documents and data in accordance with FAA Records Organization, Transfer and Destruction Standards 1350.15C
190	Regulatory	<p>The solution must be able to generate 508 complaint presentation and viewing as determined by the following criteria:</p> <p>(a) When software is designed to run on a system that has a keyboard, product functions shall be executable from a keyboard where the function itself or the result of performing a function can be discerned textually.</p> <p>(b) Applications shall not disrupt or disable activated features of other products that are identified as accessibility features, where those features are developed and documented according to industry standards. Applications also shall not disrupt or disable activated features of any operating system that are identified as accessibility features where the application programming interface for those accessibility features has been documented by the manufacturer of the operating system and is available to the product developer.</p> <p>(c) A well-defined on-screen indication of the current focus shall be provided that moves among interactive interface elements as the input focus changes. The focus shall be programmatically exposed so that assistive technology can track focus and focus changes.</p>

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	<p>(d) Sufficient information about a user interface element including the identity, operation and state of the element shall be available to assistive technology. When an image represents a program element, the information conveyed by the image must also be available in text.</p> <p>(e) When bitmap images are used to identify controls, status indicators, or other programmatic elements, the meaning assigned to those images shall be consistent throughout an application's performance.</p> <p>(f) Textual information shall be provided through operating system functions for displaying text. The minimum information that shall be made available is text content, text input caret location, and text attributes.</p> <p>(g) Applications shall not override user selected contrast and color selections and other individual display attributes.</p> <p>(h) When animation is displayed, the information shall be displayable in at least one non-animated presentation mode at the option of the user.</p> <p>(i) Color coding shall not be used as the only means of conveying information, indicating an action, prompting a response, or distinguishing a visual element.</p> <p>(j) When a product permits a user to adjust color and contrast settings, a variety of color selections capable of producing a range of contrast levels shall be provided.</p> <p>(k) Software shall not use flashing or blinking text, objects, or other elements having a flash or blink frequency greater than 2 Hz and lower than 55 Hz.</p> <p>(l) When electronic forms are used, the form shall allow people using assistive technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions and cues.</p> <p>(m) A text equivalent for every non-text element shall be provided (<i>e.g.</i>, via "alt", "longdesc", or in element content).</p> <p>(n) Equivalent alternatives for any multimedia presentation shall be synchronized with the presentation.</p> <p>(o) Web pages shall be designed so that all information conveyed with color is also available without color, for example from context or markup.</p> <p>(p) Documents shall be organized so they are readable without requiring an associated style sheet.</p> <p>(q) Redundant text links shall be provided for each active region of a server-side image map.</p> <p>(r) Client-side image maps shall be provided instead of server-side image maps except where the regions cannot be defined with an available geometric shape.</p> <p>(s) Row and column headers shall be identified for data tables.</p>
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		<p>(t) Markup shall be used to associate data cells and header cells for data tables that have two or more logical levels of row or column headers.</p> <p>(u) Frames shall be titled with text that facilitates frame identification and navigation.</p> <p>(v) Pages shall be designed to avoid causing the screen to flicker with a frequency greater than 2 Hz and lower than 55 Hz.</p> <p>(w) A text-only page, with equivalent information or functionality, shall be provided to make a web site comply with the provisions of this part, when compliance cannot be accomplished in any other way. The content of the text-only page shall be updated whenever the primary page changes.</p> <p>(x) When pages utilize scripting languages to display content, or to create interface elements, the information provided by the script shall be identified with functional text that can be read by assistive technology.</p> <p>(y) When a web page requires that an applet, plug-in or other application be present on the client system to interpret page content, the page must provide a link to a plug-in or applet that complies with §1194.21(a) through (l).</p> <p>(z) When electronic forms are designed to be completed on-line, the form shall allow people using assistive technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions and cues.</p> <p>(aa) A method shall be provided that permits users to skip repetitive navigation links.</p> <p>(bb) When a timed response is required, the user shall be alerted and given sufficient time to indicate more time is required</p>
191	Regulatory	The solution must be compliant with FAA and ATO technology standards as defined in the FAA/ATO Technology Reference Model (TRM), Certification and Authorization Process, Data Management Standard and existing FAA orders governing Information Systems
192	Pricing/Support	The solution vendor must provide a documented array of professional and support services
193	Pricing/Support	The solution vendor must provide training services
194	Pricing/Support	The solution vendor must provide service level agreements
195	Pricing/Support	The solution vendor must provide operational level agreements
196	Pricing/Support	The solution vendor must support a non-seat based licensing, small implementation licensing, and enterprise level licensing offerings
197	Pricing/Support	The solution vendor must have a public development roadmap for the proposed solution which establishes dates for future versions, support periods for existing versions, and provides traceability between specific functions and versions.